

# Food Poisoning

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These resources provide a comprehensive learning module to understand the reasons of practical food safety procedures. They are ideally suited to a wide range of learners, as they more than fulfill the requirements of Basic Food Hygiene (NVQ Level 2) and so provide the resources to meet the mandatory requirement for all FE and HE hospitality students to obtain this qualification.

Through an understanding of the scientific reasons for a food safety the student achieves the knowledge of how to manage food safety in an operational unit and also from the large company's perspective for the implementation of HACCP, making the resource suitable for HE students to enter management roles in industry.

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Identifying the potential causes of food poisoning and how to prevent contamination of food is addressed by this resource.

## Section 1. Learning Outcomes -

1. What are the symptoms of food poisoning?
2. Remember that food poisoning is caused only by bacteria but also by viruses and toxins.
3. Remember that some people may not show symptoms of a disease but can pass the disease to others.
4. Remember that the results of food poisoning can have catastrophic results for any

business.

5. Remember the importance of always being aware of food poisoning hazards and risks

*First, what is food poisoning?*

*What are the symptoms?*

*And what are the different types of food poisoning and their causes?*

Unfortunately most of us have suffered from food poisoning and know how ill we can feel, but some people who have a serious attack may never fully recover from the damage caused by the illness.

And, yes, sadly people die.

We now look at the different types of food poisoning.

### **Types of Food Poisoning**

The main cause of becoming sick is from eating food prepared by food services but not surprisingly home cooking can also be the cause of food poisoning.

There are two distinct types of food poisoning;

Infection- When the bacteria makes you sick.

Intoxication- When the poison (toxin) from the bacteria makes you sick, this is intoxication

The definition of a food borne illness-

When a person becomes ill from eating contaminated food

The definition of a food borne illness outbreak-

When two or more people not related, eat the same food and exhibit the same symptoms

As a food professional it is vital that you only prepare quality food which is safe for your customers.

It is your professional responsibility to ensure that your food is fit and in excellent condition

You will discover that danger arises not just through bacteria but there are many other ways of producing dangerous food.

### **What causes food poisoning?**

Food poisoning not only comes from bacteria but from several *micro-organisms*;

- Bacteria,
- Fungi - Yeasts and Moulds,
- Protozoa,
- Algae,
- Helminthes - parasitic worms,
- Rickettsiae - Intracellular parasites,
- Viruses.

Your number one enemy is bacteria - so let's look at the different types and how they cause an infection.

## Section 2. Bacteria - Number 1 Enemy

**Staphylococcus Aureus**- often known as *Staph*- is commonly found in:

- Infected cuts and sores,
- Acne, pimples and boils,
- Even found on healthy skin in your nose (sneezing).

So when a person sneezes or coughs on the customer's food there is a good chance that the person will become seriously ill.

Staphylococcus requires an incubation period (the time it takes to make someone ill of about **6 hours**).

Staphylococcus symptoms include:

Nausea,

- Vomiting,
- Diarrhea,
- Dehydration,
- Prostration,
- Cramps.

Some of the foods that carry Staphylococcus Aureus include:

- Custards,
- Dairy products,
- Potato salads,
- Sauces.

Prevention;

- Keep all cuts and boils properly covered preferably with a waterproof bandage **and gloves**
- Keep foods cold = below 4c
- Good personal hygiene and good sanitation
- Proper handling of left-overs and re-heating of
- foods to above 75c

**Campylobacter** is probably the most common cause of food poisoning.

Campylobacter is found in the gastrointestinal tract of poultry and cattle, and then carried to humans by food especially through undercooked meat.

This bacteria is also linked to the development of an auto- immune disease which causes neuro-muscular paralysis - Gullian-Barr Syndrome.

Campylobacter now accounts for more than half the cases of reported food poisoning, and no doubt is responsible for the vast majority of food poisoning incidents, with some scientists suggesting it may be responsible for more than 500,000 cases each year in Britain alone.

Campylobacter is commonly found in;

- Raw poultry,
- Raw milk,

And is transmitted by animals such as birds and squirrels.

The symptoms of Campylobacter are;

- Headache,
- Fever,
- Diarrhea (frequently with blood),
- Strong abdominal pain that may be thought to be appendicitis.

Some of the foods that can carry campylobacter are;

- Raw milk,
- Raw chicken,
- Undercooked meats especially chicken,
- Ready to eat foods that have suffered cross-contamination with raw poultry.

Prevention;

- Thorough cooking of all poultry,
- Care to avoid cross-contamination - especially the delivery and storage of raw poultry,
- Proper personal hygiene,
- Proper storage - keeping raw meats below 4c in a separate refrigerator.

**Shigella** - commonly known as Dysentery, Shigella or dysentery the filth disease- is commonly found in,

- Fecal material,
- Flies,
- Rodents.

The symptoms of Shigella are;

- Diarrhea,
- Fever,
- Chills,
- Fatigue,
- Dehydration,

Some of the foods that can carry Shigella are;

- Refried beans,
- Salads eg tuna and potato,
- Sandwiches,
- Contaminated water.

Prevention;

- Good personal hygiene,
- Proper pest control,
- Proper sewage disposal,
- Proper cooking - to recommended temperatures to kill bacteria,
- Good refrigeration - keeping foods below 4c.

**Salmonella** is one of the most common causes of bacterial food poisoning. This bacteria is found in many foods and indeed in ourselves. Today there are many different variations. You may have heard that many bacteria are becoming resistant to treatment by antibiotics, salmonella is no exception. This bacteria is more dangerous because of the difficulty of treating the antibiotic resistant strains, some scientists consider that the use of antibiotics in farm animals is one of the reasons.

Cattle which are fed with antibiotics allow the bacteria to become antibiotic resistant.

Therefore, when the faeces are used as raw sewage, fertilizer the salmonella lands on our food.

This can be a serious hazard with *ready to eat* vegetables such as lettuce and salads; there was

even an outbreak with contaminated cantaloupe melons.

Salmonella is commonly found in;

- Sewage,
- Soil,
- Water not properly treated,
- Chicken and eggs (including the yolk),
- All raw meats should be considered to be infected.

Humans can be carriers.

The symptoms of salmonella are;

- Abdominal pain,
- Headache,
- Nausea,
- Vomiting,
- Fever,
- Diarrhea.

Some of the foods that can carry salmonella are;

- All raw meats, especially chicken,
- Raw eggs,
- Salads,
- Sauces especially cold sauces containing raw eggs,
- Raw vegetables.

Prevention;

- Proper personal hygiene,
- Proper and frequent hand-washing,
- Good working practices that avoid any possibility of cross-contamination,
- Keeping foods properly refrigerated below 4c,
- Cooking foods properly to kill salmonella bacteria,
- Using cracked eggs,
- Washing and sanitizing all ready-to-eat vegetables,
- Paying special attention to how fresh foods are received to avoid any chance of cross-contamination between raw meats and *ready to eat* foods.

**Escheria Coli** is more commonly known as simply e.coli.

E.Coli is common and it is found in the intestines of animals including cattle and ourselves.

This common type of bacteria is sometimes referred to as *wild e.coli*. While it will cause food poisoning it is not as dangerous as its relative **E.Coli 0157 H7** - this will produce toxins that cause permanent kidney damage and death.

It was this bacteria that was responsible for the food poisoning outbreak in Lanarashtra where more than twenty persons died. Nowadays because of the use of sewage as a fertilizer E.Coli 0157 H7 has found its way onto vegetables (such as radishes) and other ready to eat foods, making this one of the most dangerous (indeed deadly) food poisoning pathogens.

It is found on meat and meat products when contaminated by faecal matter (usually in the slaughter house). This is how hamburgers can be a hazard especially as the processing pushes the outside contaminated portion into the centre.

That is why we talk about the centre core temperature to ensure that the cooking temperature is

sufficiently high to kill these dangerous bacteria. Elderly and young people are especially vulnerable as they have little ability to defend their bodies against E.Coli's deadly toxins.

E.Coli is commonly found in;

- Intestinal tract of animals,
- Raw (untreated) sewage,
- Untreated water.

The symptoms of E.Coli are;

- Severe abdominal pain,
- Bloody diarrhea,
- Nausea,
- Vomiting.

E.Coli can be found in;

- Meats especially ground (minced) meats, hamburgers and sausages
- Sprouts and vegetables specially those growing close to the ground,
- Apple juice,
- Not properly treated water.

Prevention;

- Proper cooking of foods (centre temperature of 75c) especially prepared meat products,
- Good personal hygiene,
- Proper refrigeration and storage to prevent cross-contamination,
- Proper cleaning (sanitisation) of ready to eat vegetables,
- Vigilance at all times to prevent raw meat and ready to foods coming into contact with each other - this is especially true when receiving and storing goods.

**Clostridium Perfringens** can form spores which will become active when the temperature is right for bacterial growth - 10c - 60C.

Caution must be taken when boiling (casseroles) especially in large pans to ensure complete cooking of ingredients.

This means that the pot must be stirred frequently.

For large amounts (over 20 portions) a *brat pan* should be used as this helps to ensure even cooking.

Also attention must be paid when chilling food to ensure that the chill time in the dangerous zone is kept to an absolute minimum.

This bacteria can be found in **saucers, casseroles and soups** (especially those with meat) - items which are cooked and re-heated.

Clostridium Perfringens is frequently found in;

- Intestinal tracts of animals.

The symptoms of clostridium perfringens include;

- Abdominal Pain,
- Diarrhea.

Foods that can cause clostridium perfringens poisoning include;

- Improperly cooked foods - cooking too quickly,
- Especially boiled, steamed, braised and stewed dishes with meat.

Prevention;

- Thorough and quick cooking,
- Serve as quickly as possible,
- Quickly chill all foods: either use a blast chiller or break down into smaller portions.

**Listeria** is commonly found and one of its most common causes is non-pasteurised cheese.

It is a dangerous pathogen which can cause death especially that of embryos,  
Government information services produce pamphlets to help pregnant women change their eating habits - to avoid any chance of catching Listeria.

In America it is estimated that more than 2,500 people become ill from Listeria food poisoning and 500 people die. That means that one in five persons who becomes ill with Listeria will *die*.

Especially at risk are the elderly, young children and pregnant women, but also anyone with an impaired immune system such as sick people.

Listeria is commonly found in;

- Humans,
- Domestic animals,
- Fowl,
- Soil on vegetables,
- Water (Cooling coils),
- Mud,
- Kitchen drains.

The symptoms of Listeria include;

- Nausea,
- Vomiting,
- Headache,
- Fever,
- Chills,
- Backache,
- Meningitis (causes death in unborn babies).

Foods implicated with Listeria poisoning include;

- Unpasteurized milk and cheese,
- Raw vegetables,
- Raw poultry,
- Raw meats,
- Raw seafood.

Prevention;

- Use only pasteurized milk - this excludes cheese made from non-pasteurized milk,
- Wash vegetables well,
- Cook foods properly,
- Avoid cross-contamination.

**Bacillus Cereus** is found amongst dry store goods such as rice and spice/seasoning mixtures.

The most frequent food implicated is rice, that is why storing cooked rice is hazardous, it is better to cook and chill rice for each service rather than store cooked rice.

Food poisoning from poorly stored cooked rice is a common occurrence in ethnic restaurants.

Bacillus Cereus is commonly found in;

- Soil,
- Water,
- Rice,
- Faecal Matter,
- Decaying Materials.

The symptoms of Bacillus Cereus include;

- Nausea,
- Vomiting,
- Diarrhea,
- Cramps.

Foods implicated with Bacillus Cereus food poisoning include;

- Meat and meat products,
- Seasonings and spices,
- Dry mix foods such as sauce mixes, gravies, dry soups.

Prevention;

- Keep dry foods dry.
- Cool foods rapidly,
- Use shallow pans to cook quickly and always stir,
- Avoid storage - use as quickly as possible.

## Section 3. Viruses

**Hepatitis A** is a virus that is found in shellfish especially oysters.

It is the result of harvesting seafood too close to where sewage is found - showing the importance of only purchasing shell fish from reputable suppliers. People are carriers, but sadly those infected may suffer permanent liver damage.

Hepatitis A is commonly found in;

- Water contaminated with sewage.
- Human beings can be carriers,
- Faecal Matter - oral faecal contamination is a frequent transmission route.

The symptoms of Hepatitis A include;

- Fever,
- Nausea,
- Abdominal pain,
- Fatigue,
- Jaundice.

Foods implicated with Hepatitis A poisoning include;

- Water contaminated with sewage,
- Oysters, clams harvested from polluted water,
- All ready-to-eat foods e.g. salads, sandwiches - contaminated by hand of human carrier.

Prevention;

- Exclusion of infected employees-carriers Hepatitis A is easily killed by cooking therefore cooked oysters and clams are safe Good personal hygiene with frequent proper hand



- washing as the leading cause of infection is faecal-oral transmission,
- Purchase from approved sources especially shellfish never purchase from street vendors.

**Norwalk** -small round virus is a frequent cause of gastroenteritis.

This virus which can be found in seafood is usually transmitted from person to person by the oral-fecal route.

It is a sign of poor hygiene, especially improper hand washing after visiting the toilet.

Outbreaks of the Norwalk virus have occurred on cruise ships where many people live closely together.

Good personal hygiene and proper handling and sourcing of seafood are vital to prevent an outbreak.

As the virus is easily passed between people it is vital to always practice good hygiene as an outbreak on a cruise ship, holiday resort and worst of all hospitals and care homes will have disastrous results.

## Section 4. Moulds and Yeasts

Moulds and yeasts are common signs of food spoilage and often thought to be harmless - but this is not the case. Some moulds and yeasts are indeed harmful and so all food showing any signs of growth should be discarded.

It is not worth taking a chance!

The growth of yeasts is a sure sign of poor sanitation and therefore the chances are that there are other horrors lurking in the kitchen!

Prevention;

- Store food properly and keep refrigerated,
- Clean properly and sanitize,
- Discard all food showing signs of growth,
- **Never** cut away the growth from a food item and serve the remainder.

## Section 5. The Law and Legal Requirements

Throughout Europe there are Food Safety Laws which control how we had handle food.

These laws are enforced by food inspectors and environmental health officers.

Food inspectors can at any time enter a place where food is being prepared. They will inspect the food and can take away samples for testing.

Premises found to be unfit can be closed; persons found guilty of breaking the law can be;

- Fined,
- Imprisoned,
- Customers suffering from food poisoning can claim financial compensation,
- Suffer severe financial loss.

An incident of food poisoning will cause serious financial loss, sometimes resulting in business

closure, bankruptcy, and loss of work.

### ***Loss of Customers = Loss of Business.***

Nowadays the cases of food poisoning are increasing and that means everyone who handles food must constantly be aware of the possibilities of food poisoning.

Traditionally hygiene was learnt as a separate subject from that of catering, but it is now seen as an essential and integral part of catering education for professionals like you.

While the law provides for fines and even imprisonment, perhaps the most damaging effects on a business comes from the customers. As most cases of food poisoning go unreported it is the message from the consumer that can be the worst.

'Don't go there, I was horribly sick!'

What's more, as a proprietor you may never be aware of this until you find your business failing.

You may have sadly suffered from food poisoning and feel very angry towards the place which took your money while they poisoned you.

If the poisoning comes from a toxin, which is very common, you could be losing business without even being aware of what is happening.

As a professional you must always be diligent and think how to reduce any chance of food poisoning.

### **The Importance of Reputable Suppliers.**

Customers nowadays require food products imported from all over the world. This trend towards more elaborate menus, with a wider variety and range of food, means it is vital to set purchasing standards and to only buy from reputable suppliers.

Another hazard presented by having a wider menu choice is that some items may not sell as fast as others and so will need to be discarded for safety.

A highly professional understanding of the products is required to balance ordering with consumption. The price of wastage must be charged into the menu pricing.

This is a result of our changing life styles, where the consumer demands a wide range of food products, often brought from the four corners of the world. Menu prices must reflect the amount of food which has to be discarded to ensure food safety.

The importance of always using reputable suppliers cannot be over emphasised, especially as many foods are imported from countries whose hygiene standards are very poor.

It would be very foolhardy to provide a wide and exciting menu if it results in ***charging your guests for food poisoning.***

Now you may realise that safety of food enters all stages of food preparation and planning. From pen and paper stage to the delivery of the finished product.

Now you can realise the vital importance of handling food safely.

Many people working with food believe that food hygiene is something which is simple and everyone can easily learn and always practise.

This sadly is far from the truth. There are many old bad habits, and outdated beliefs that one system of hygiene always works.

Safe food handling requires conscious and persistent thought.

## Section 6. Key Points

1. The number of food poisoning incidents is increasing.
2. Many bacteria are becoming more dangerous such as developing resistance to antibiotics.
3. Not all cases of food poisoning result in serious illness but may result in the loss of customers.
4. The symptoms of food poisoning generally include;
  - Diarrhea sometimes bloody,
  - Abdominal pain and cramps,
  - Vomiting and nausea,
  - High temperature and fever,
  - Chills,
  - Usually the symptoms of food poisoning start within 24 hours of eating the contaminated food, but may take longer.
5. If you have any of these symptoms immediately report them your supervisor and see your doctor.
6. If you have these symptoms do not handle food as you will infect your customers and fellow employees.
7. Poor hygiene not only leads to disease and death but also;
  - Fines,
  - Imprisonment,
  - Loss of customers and business,
  - Loss of income and profit,
  - Food spoilt leading to food wastage,
  - Infestation by pests,
  - Even to closure of business with loss of work.
8. Only buy from reputable suppliers and set purchasing standards. At all times it is important to be professional in your work and proud of your performance; this can only be achieved in a clean and healthy workplace.

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